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ology. The tendency to increase of auroras in clearing weather, and diminution in falling weather, is shown in the Auroral and Pluvial General Means:

	AURORAS.				RAINFALL.			
	New England.	Western Hemisphere.	Eastern Hemisphere.	General Mean.	Lat. 5° 44′ to 35° 41′	Lat. 36° 9′ to 42° 20′	Lat. 42° 21′ to 57° 31′	General Mean.
Jan.	89	96	107	97	78	97	116	97
Feb.	100	107	125	111	75	95	103	91
March,	112	112	136	120	75	100	93	89
April,	107	103	116	109	83	106	89	93
May,	90	86	73	83	105	107	87	100
June,	84	77	42	68	129	106	84	106
July,	92	85	45	74	141	103	84	109
Aug.	109	103	79	97	138	97	89	108
Sept.	120	118	119	119	119	92	101	104
Oct.	118	117	133	123	96	94	113	101
Nov.	96	103	120	106	82	102	120	101
Dec.	81	93	105	93	80	103	122	102

INFLUENCE OF METEORIC SHOWERS ON AURORAS.

BY PROF. PLINY EARLE CHASE.

(*Read before the American Philosophical Society, May* 16*th*, 1872.)

Professor Lovering's discussion of the periodicity of the Aurora Borealis (Trans. A. A. S. Vol. X., Part I.), not only exhibits maxima and minima of frequency at periods corresponding to general minima and maxima of rainfall (see above), but it also furnishes evidence of a tendency, in other great atmospheric disturbances, to increase auroral displays.

In preparing the following table, I first took the second means of Lovering's Table LII. (containing 10316 auroras, arranged according to their frequency on each day of the year). After grouping the results in five-day periods, I calculated the ratio of each ordinate to a mean ordinate of 100. Against each ordinate which corresponds to a supposed meteoric period, I set the initial K. (Kirkwood's "Meteoric Astronomy"), or W. (Wolf, cited by Lovering, p. 221).

Comparative Table of Auroral and Meteoric Displays.

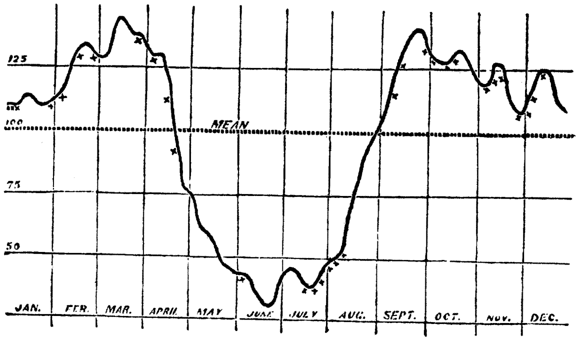
Jan.	3,	110 K., W.	Mar.	19,	144	June	2,	44	Aug.	16,	76	Oct,	30,	126
	8,	110 W.		24,	138		7,	44 W.		21,	88	Nov.	4,	120
	13,	114		29,	138 W.		12,	41		26,	95		9,	121 W.
	18,	113	Apl.	3,	133		17,	35		31,	102		14,	129 K., W.
	23,	110		8,	130 W.		22,	31	Sep,	5,	112		19,	127 W.
	28,	111		13,	131		27,	36		10,	123 W.		24,	113
Feb.	2,	113 W.		18,	118 K., W,	July	2,	40		15,	131 W.		29,	109 K., W.
	7,	116 W.		23,	94 K.		7,	46		20,	138	Dec.	4,	115 W.
	12,	125		28,	79		12,	44		25,	142		9,	122 K., W.
	17,	133 K., W.	May	3,	76		17,	40 W.		30,	139 W.		14,	127 K., W.
	22,	134		8,	66		22,	39 K.	Oct,	5,	133 W.		19,	125
	27,	132 W.		13,	61		27,	45 K., W.		10,	129		24,	114
Mar.	4,	129		18,	57	Aug.	1,	49 K., W.		15,	129 K,		29,	111
	9,	133		23,	51		6,	51 K., W.		20,	133 K.			
	14,	145		28,	47		11,	60 K., W		25,	132			

The table, as well as the accompanying curve, exhibits the following peculiarities:

1. The principal maxima occur near the equinoxes, and are apparently due to the favorable position of the earth for the development of circulating electric currents.

2. There is an evident grouping of meteoric displays in the vicinity of the maxima and minima.

3. The grouping is more strongly marked upon the ascending, than on the descending sides of the inflections.



4. The principal secondary maxima (in February, October, November and December), exhibit the most striking accordance.

5. Nearly all of the apparent exceptions to this general accordance are occasioned by the rapid decline of the general curve, which is so great as to veil the subordinate maxima, when five-day means are taken.

Of all the meteoric ordinates suggested by Kirkwood, including those which he regards as doubtful, three correspond with auroral minima, eight with increasing auroral displays, two with maxima, and only two with ordinates of diminishing auroral frequency. The two exceptional ordinates become normal if we examine the daily curve of second means, which shows subordinate maxima on April 19th and April 24th.

Of the meteoric ordinates suggested by Wolf, four correspond with minima, nine with ascents, seven with maxima. and six with descents in the auroral curve. Of the six apparently abnormal ordinates, only two, those of March 31st and Nov. 19th, are on descending inflections of the auroral daily curve of second means.

There seems, therefore, good reason to look for an increase of auroral displays, soon after every meteoric shower.

PLANETARY ILLUSTRATIONS OF EXPLOSIVE OSCILLATION.

By Pliny Earle Chase.

(*Read before the American Philosophical Society, May 16th,* 1872.)

The secondary centre of gyration in an exploded gas, on its return towards the centre of gaseous mass, being, as I have shown, at $\frac{5h}{9}$ (h representing the extreme excursion consequent on the explosion), we may reasonably expect, by referring the planetary masses to similar primary and secondary centres, to obtain evidence relative to the probability of the hypothesis of molar and molecular correlations. Whether the nebular hypothesis be true or false, the planets are oscillating under the combined action of centrifugal and centripetal forces. In their continual virtual fall towards the Sun, they are subject to such disturbances as arise from their mutual interaction, and should, therefore, tend to arrange themselves somewhat like the particles of an exploded gas. I submit the following exemplifications of such a tendency, the calculations being generally based upon the hypothesis that the planets are either in conjunction, or nebulously diffused along the entire line of their orbits.

1. Mercury is near the theoretical mean excursion $\left(\frac{5h}{9}\right)$ of the centre of gravity of the intra-asteroidal belt of planets.

Mercury[*]	$3\frac{1}{3}\times$	$.3871=$	1.2903
Venus	$25\times$	$.7233=$	18.0832
Earth	$31.85\times$	$1.\quad=$	31.85
Mars	$3\frac{1}{3}\times$	$1.5237=$	5.079
	$63.52\times$	$.8864=$	56.3025

$\frac{5}{9}\times.8864=.4924$ from the centre of gravity, or .3940 from the Sun, the true distance being .3871 ; $\frac{3940}{3871}=1.0178$.

2. The actual eccentricity of Mercury's orbit : the theoretical eccentricity if the oscillation were referred primarily to the intra-asteroidal

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[*] The values of the astronomical elements are taken from Norton's Astronomy, unless otherwise stated.